Unified Command Shoreline Cleanup Endpoint and Sign off Process

South 4 Group Fire

Port Neches, Texas

Prepared on behalf of TPC Group

Prepared by CTEH, LLC

December 7, 2019

	Name / Organization	Signature	Date
Prepared by SCAT Coordinator	Robert Simmons, Es² / CTEH		
Reviewed by			
Reviewed by			
Approved by TPC			
Approved by SOSC			
Approved by FOSC			
Approved by			

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This document refers to on water and shoreline considerations for Divisions A-E as shown on the attached maps.

1.0 Outfall System and Oiling Description

On 11/27/2019 an explosion and fire at the TPC Port Neches Facility resulted in loss of containment of multiple hydrocarbon products. Water runoff from subsequent firefighting efforts, resulted in the release of potentially various hydrocarbon products at outfall 201 (inside TPC facility) and into the manmade outfall 001 outfall canal for approximately 8 days, during which time there was also an incident related disruption of operation of the joint waste water treatment plant for approximately 1.5 days . Based on the known damage to various tanks and process vessels, there was potential release of unknown amounts of the following products: Raffinate, NMP (solvent), Polyblend, 1,3 -Butadiene, Rich solvent, Crude (C4), Lube oil, Hydraulic oil.

The manmade 001 outfall canal ultimately discharges to the Neches River primarily thru outfall 004 shown in Division E, and or thru the Star Lake Canal in Division D.

Oil and or other constituents were released into the 001-outfall canal (at the eastern most end of Division A) on or after 11/27/2019 when the level in the that canal was high, primarily due to the firefighting water runoff. The water level in the 001-outfall canal has since fallen and as such the shoreline oiling ("bathtub ring") where present is/was above the current waterline.

Water level in Division E, which contains the tertiary water treatment wetland cells, is controlled by pumps at the southwestern most point of Division E, and ultimately exits thru outfall 004 into the Neches River at the northeastern most point of Division E. When the level in the 001-outfall canal is above the weir at the boundary between Divisions B/C, flow also proceeds thru Divisions C & D (Star Lake Canal) and into the Neches River at the northeastern most point of Division D.

The outfall canals in Divisions A-E are manmade, and in the case of Division E is an engineered tertiary wetland water treatment system. Per TP&W, there is abundant wildlife in the area, including alligators, turtles, and birds (wading birds, songbirds, waterfowl, and raptors). Division A is dominated by densely vegetated riparian habitat along the shoreline, that diminishes eastward through Divisions B through E.

Initial oiling in each division based on point observations on 12/2/2019 thru 12/5/2019 are depicted on the attached maps. Shoreline oiling conditions are described as light, and there was no heavy or pooled oil observed during the SCAT observations beginning on 12/2/2019. Access to view the shoreline on both sides of the canal of Division A and part of Division B is limited due to thick vegetation. There have been no observations of any heavy shoreline oiling. The most significant amount of shoreline oiled is in Division A. See below oiling summary as of 12/8/2019.

Division		Light Oiling (mi) Active Clnup	NFT (mi)	NOO (mi)
A		1.51		
B		0.60		0.61
C		0.47		0.49
D				2.57
E1	pmps->wetland	1.05		
E2	wetland->river			1.29
		3.63		4.96

On 12/5/2019, the water level in Division E fell and exposed dark material, assumed to be mostly mud, on the shoreline vegetation. Some "streamers" of very light sheening was observed and possibly associated with the dark material as described in SCAT Daily Report(s). (See sampling section below)

It should also be noted that there are at least 2 additional outfalls into Division A at other points that would appear unrelated to the TPC facility.

2.0 Shoreline Treatment (Cleanup) Methodology

Multiple boom lines (18" containment boom and sorbent boom) were initially deployed across the canals in all divisions. Oil snare has also been deployed at several locations in an attempt to attenuate sheening. Shoreline and on water cleanup in the 001-outfall canal, primarily in Division A & B, has involved low pressure flushing, raking where appropriate, and manual collection of spent sorbent and oily debris primarily from boats. In Division A & B, cutting/trimming of low hanging vegetation that created accumulation points for oil and oily debris has been and is being performed where necessary.

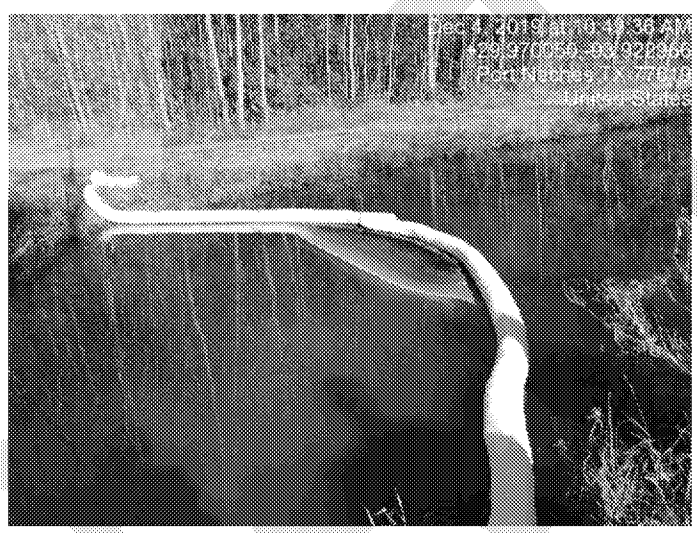
In Division E, the dark material on the vegetation that became exposed when the water level fell (see photo in Section 3) is being flushed with a wash pump and collected in booms and recovered manually, and this is effectively removing the material and reducing the associated sheen.

In addition to the point surveys conducted in all divisions from Dec 2 – Dec 5 by SCAT Teams with an RP, SOSC and FOSC rep, since then SCAT Team leads have been acting in a SCAT-Ops Liaison role and have monitoring and documenting cleanup up activities and coordinating with operations.

3.0 Sampling

CTEH is conducting an extensive water sampling and analysis program which is being reported elsewhere. Two specific samples were taken at the request of SCAT in order to better understand some material being observed, as follows.

- Photo below, Division E just downstream of the pump station output, 12/4/2019 Sample (Z019) taken of material accumulated in boom shown in photo below, and referenced in the 12/4/2019 SCAT Daily Report. Results of the analysis for this sample have not yet been reported.



- Photo below, Division E in area between the pump station and Atlantic Road, typical for entire area, 12/6/2019 Sample taken of dark material on vegetation (X016) shown in photo below and referenced in the 12/6/2019 SCAT Daily Report. The sample analysis intended to be representative of the dark material indicated the presence of hydrocarbon. A soil sample (S016) was also taken in this area. The results of the soil sample have not yet been reported.

4.0 Endpoint Criteria

The following are the elements of the endpoint criteria intended for use in the final signoff inspection.

1. No released material on vegetation or pilings that can rub off on contact and affect sensitive areas, wildlife, or human health.
2. No free-floating released material unless removal will adversely affect the habitat and/or pose a risk to human health.
3. Remaining released material does not produce a sheen which will affect sensitive areas and wildlife. (i.e. minor sheening not deemed to threaten sensitive areas or wildlife would meet the endpoint.)
4. No readily accessible and/or mobile oiled debris; unoiled debris should not be removed.
5. Less aggressive endpoints will be evaluated on a site-specific basis.

5.0 Final assessment and Signoff

During Phase 3 as indicated below, and or during or after any prescribed maintenance program, a SCAT team with reps from the RP, SOSC and FOSC and potentially other stakeholder(s) (e.g. landownder) as appropriate will conduct a continuous shoreline inspection beginning at Division A and continuing sequentially thru the other Divisions to confirm that the above endpoints have been met. It is likely that this will have to be done by boat at least in Division A & D and some or all of Division B in order to get a continuous view of the shoreline. It will be left to the SCAT team as to whether adequate coverage of the shoreline in the remaining divisions will require a boat or whether it can be done by foot. An appropriately sized OSRO crew will accompany the SCAT Team during the inspection in order to be able to address any issues that might otherwise prevent meeting the Endpoint Criteria during the inspection, and or to document the location to return to for additional shoreline treatment if needed. The SCAT Team will sign and complete the attached form indicating the results of their inspection. **If the result of the SCAT Team inspection is that the Division meets the Endpoint Criteria, the completed and signed Shoreline Inspection Report form will be the final and confirming document that no further treatment is required, and that the division is "out of the response."**

6.0 Situational Phases

It is anticipated that there may need to be a maintenance or monitoring period with a reduced amount of boom in place and with no active cleanup operations but with periodic monitoring. This maintenance or monitoring **It should be noted however, that as long as boom is deployed (sorbent boom or containment boom), it will continue to collect debris, organic scum or other material which may not be associated with any material being released by TPC**, as well as possible residue from the material that was released as a result of the incident on 11/27/2019. **When appropriate, removal of some of the lines of sorbent and or containment boom will allow more efficient natural flushing, collection and removal of accumulated material.**

The following is an outline of a three phase approach that will help guide when the final assessment and signoff process should commence.

Parameter Descriptor	**Phase 1**	**Phase 2**	**Phase 3**
Out fall 201 weir still holding oil	✓		
Outfall 201 no longer deemed a potential oil source		✓	✓
Fire water still being sprayed	✓		
Firewater no longer being sprayed		✓	✓
Re start of Firewater spraying not anticipated			✓
Flushing of oil/oily debris in A & B and vegetation trimming	✓	✓	
Adequate flushing completed in Divisions A & B & E			✓
All oily debris removed in affected divisions			✓
Multiple boom lines remain in all divisions	✓		
Removal of some lines of boom to increase flushing and collection efficiency		✓	
Reduced number of boom lines in all Divisions			✓
No significant accumulations of sheen or emulsified oil booms over 48 hr period			✓

Once it is agreed that Phase 3 has been achieved, an assessment of the ongoing risk of potential additional oil release will be made. **If a "maintenance program" is deemed necessary**, a determination will be made as to the boom locations to be maintained as well as the frequency of the inspection and maintenance of each and the duration of the boom deployments and "maintenance program." For example, the "maintenance" program might be required to extend through at least the first significant rain event.

During the "maintenance program" SCAT personnel will continue to be part of the periodic inspection and general shoreline monitoring effort.

When deemed appropriate a final shoreline assessment and signoff will be conducted based on the process described in this document. The possibility exists that adequate shoreline cleaning for a signoff will be completed prior to the point when there is no further concern about a potential additional release, and in this case the determination of when to initiate the final shoreline assessment and signoff will be made by Unified Command.

7.0 Shoreline Inspection Report

South Group 4 Fire Incident

Division Inspected (circle as appropriate): A B C D E

Date of Inspection: _____ **Time of Inspection:**_____

Inspection completed along entire Division: Yes / No **Other**:_____

Result / Recommendation:

☐ Division meets Endpoint Criteria.

☐ Division does not meet Endpoint Criteria; No Further Treatment Feasible.

☐ Division does not meet Endpoint Criteria; additional monitoring recommended.

☐ Division does not meet Endpoint Criteria; additional active or passive treatment recommended.

(Provide details of issues and required actions.)

☐ Continued monitoring required

(Provide details of frequency and schedule)

Inspection Team Members

Name / Org	Signature
_____ FOSC Rep	_____
_____ SOSC Rep	_____
_____ RP Rep	_____
_____ Landowner Rep	_____

8.0 Attachments

Division Maps

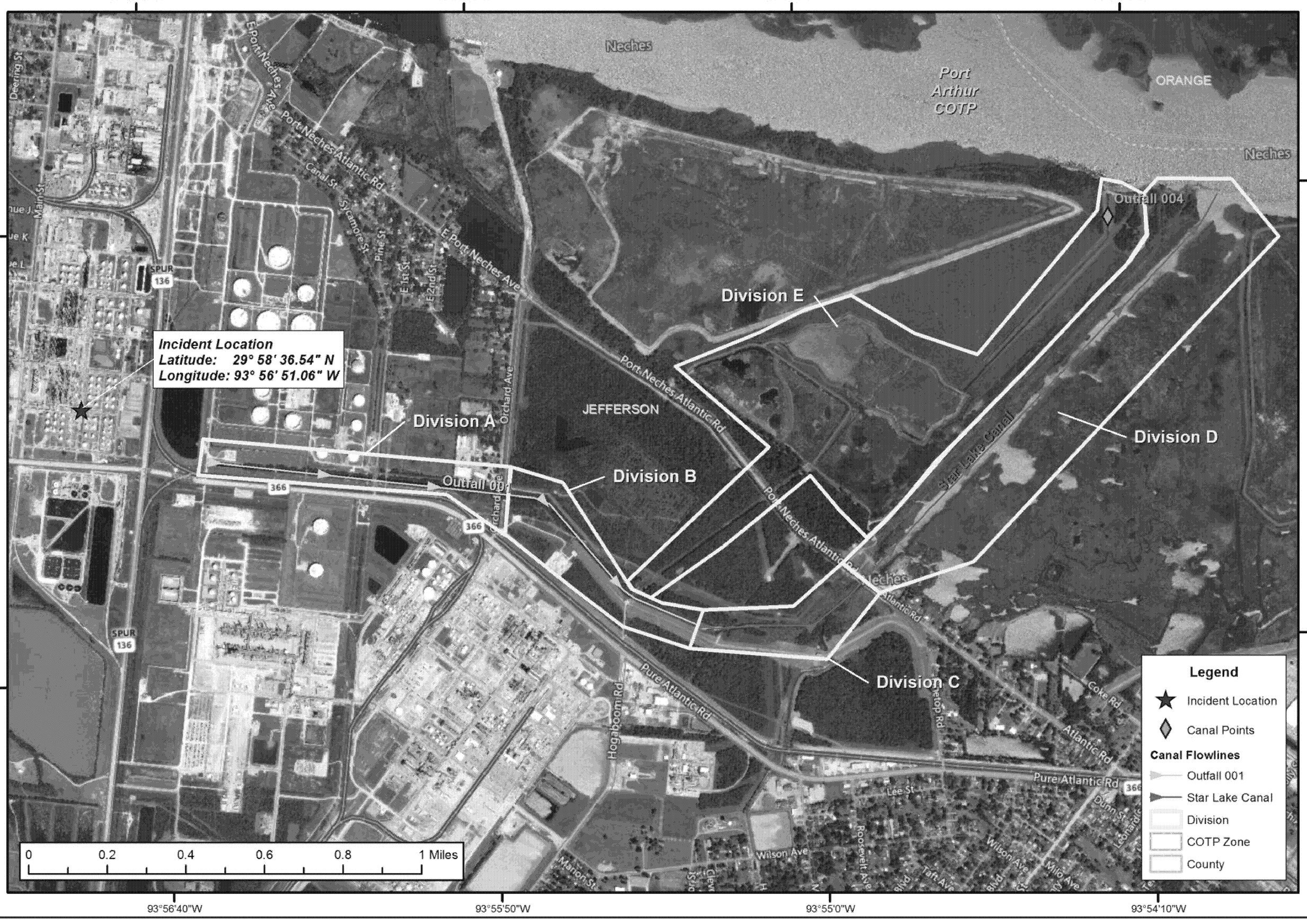
Oiling Observation Maps

South Group 4 Fire
Division Overview Map

TPC Group

The Response Group
Emergency Response Pre-Planning & Support

Scale: 1:20,000



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TPC Group

South Group 4 Fire
Division A Overview Map

The Response Group
Emergency Response | Pre-Planning & Support

Scale: 1:6,000

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TPC Group

N

South Group 4 Fire
Division B Overview Map

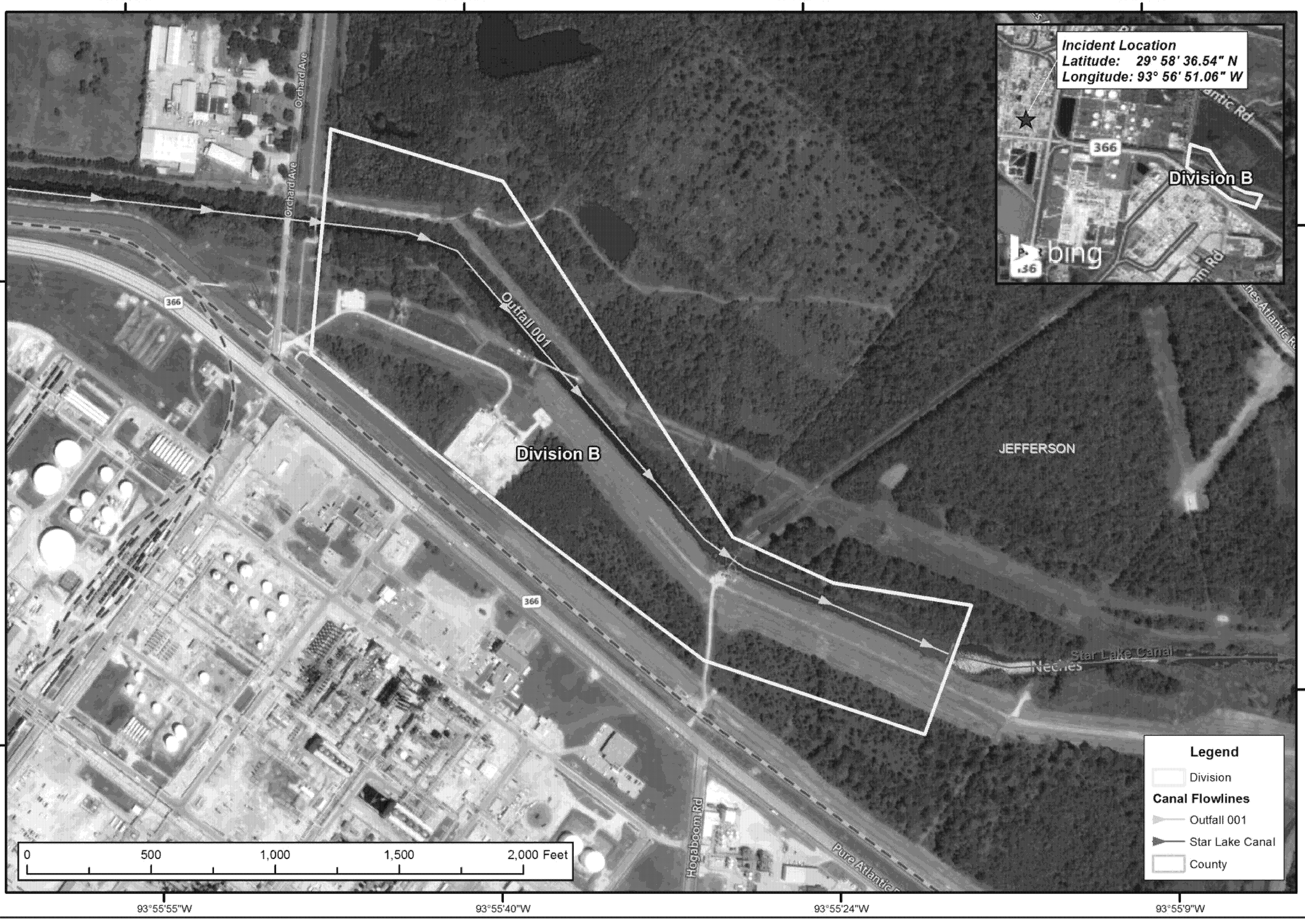
The Response Group
Emergency Response | Pre-Planning & Support

Scale: 1:6,000

93°55'55"W 93°55'40"W 93°55'24"W 93°55'9"W

29°58'21"N

29°58'2"N



93°55'55"W 93°55'40"W 93°55'24"W 93°55'9"W

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TPC Group

N

South Group 4 Fire
Division C Overview Map

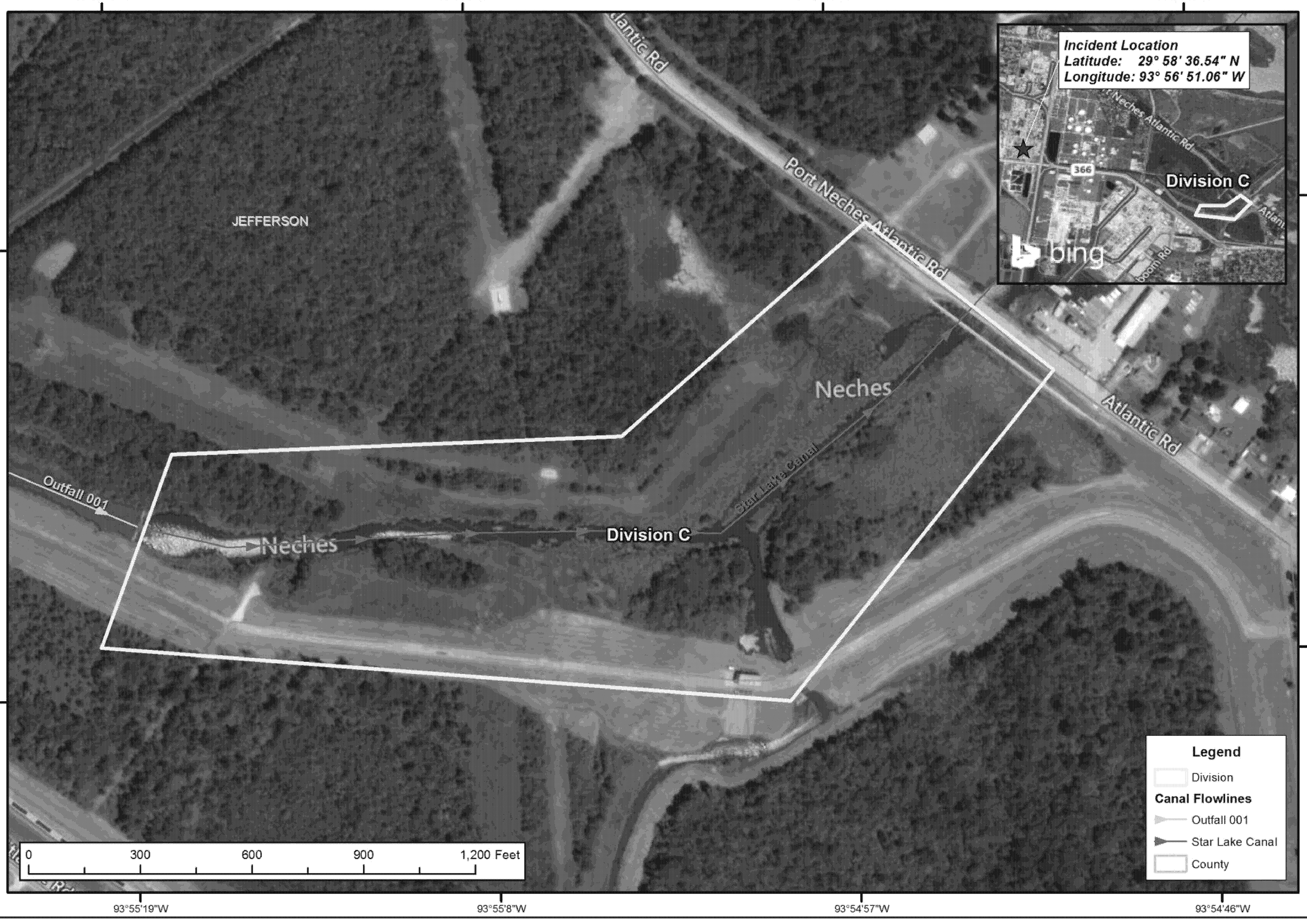
The Response Group
Emergency Response | Pre-Planning & Support

Scale: 1:4,000

93°55'19"W 93°55'8"W 93°54'57"W 93°54'46"W

29°58'12"N

29°58'0"N



93°55'19"W 93°55'8"W 93°54'57"W 93°54'46"W

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South Group 4 Fire
Division D Overview Map

TPC Group

The Response Group
Emergency Response | Pre-Planning & Support

Scale: 1:13,000

ED_004345_00000289-00014

South Group 4 Fire
Division E Overview Map

TPC Group

The Response Group
Emergency Response | Pre-Planning & Support

Scale: 1:13,000

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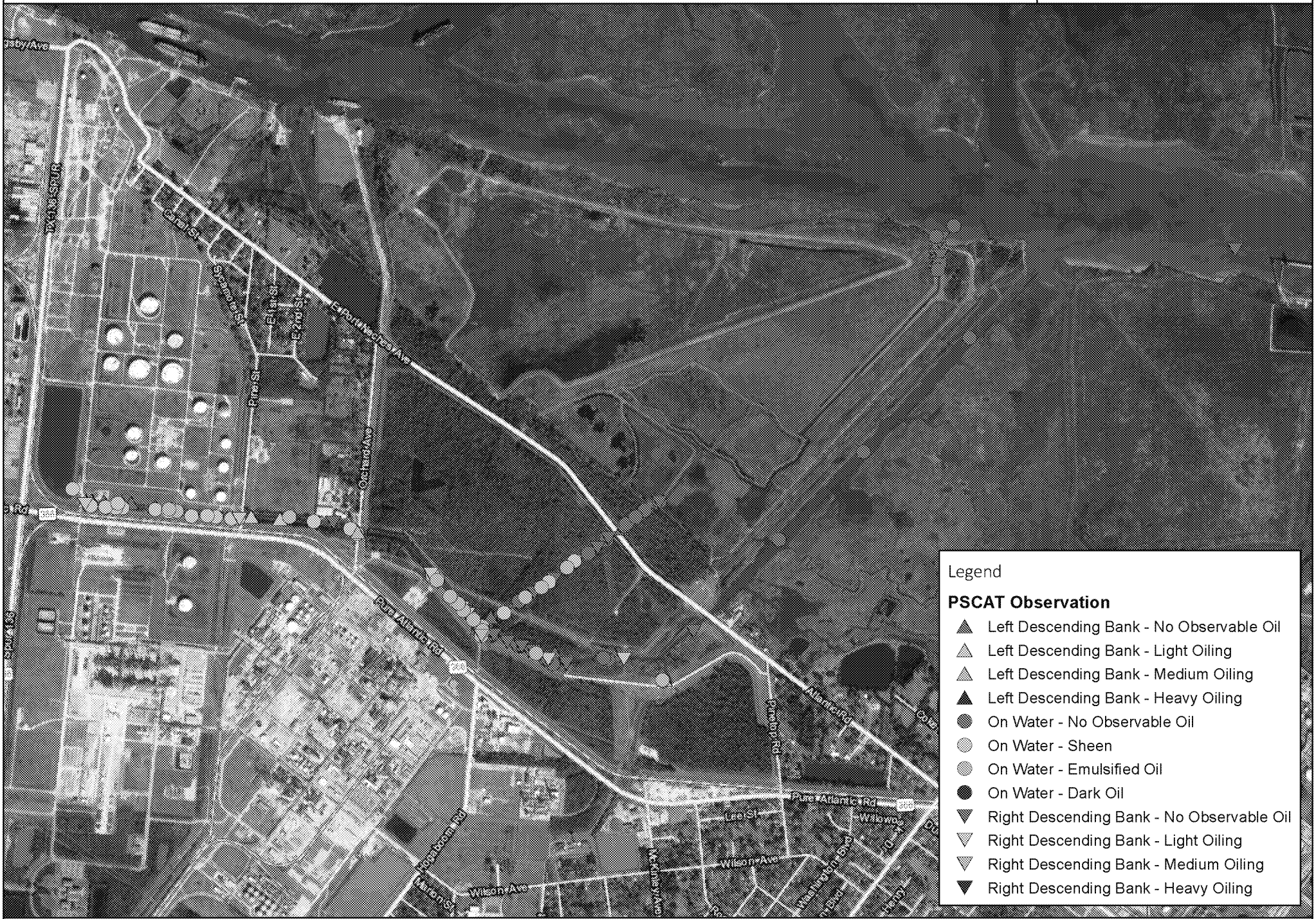
CTEH

Rapid Shoreline Assessment

South 4 Group Fire | Port Neches, TX | December 02, 2019 - December 04, 2019

0 0.25 0.5 Miles

Project: 112312
Client: TPC Group
City: Port Neches, TX
County: Jefferson



COORDINATE SYSTEM: *NAD 1983 StatePlane Texas North Central FIPS 4202 Feet* **DATUM:** *North American 1983* **LAST UPDATED:** *12/5/2019 11:35:30 AM*